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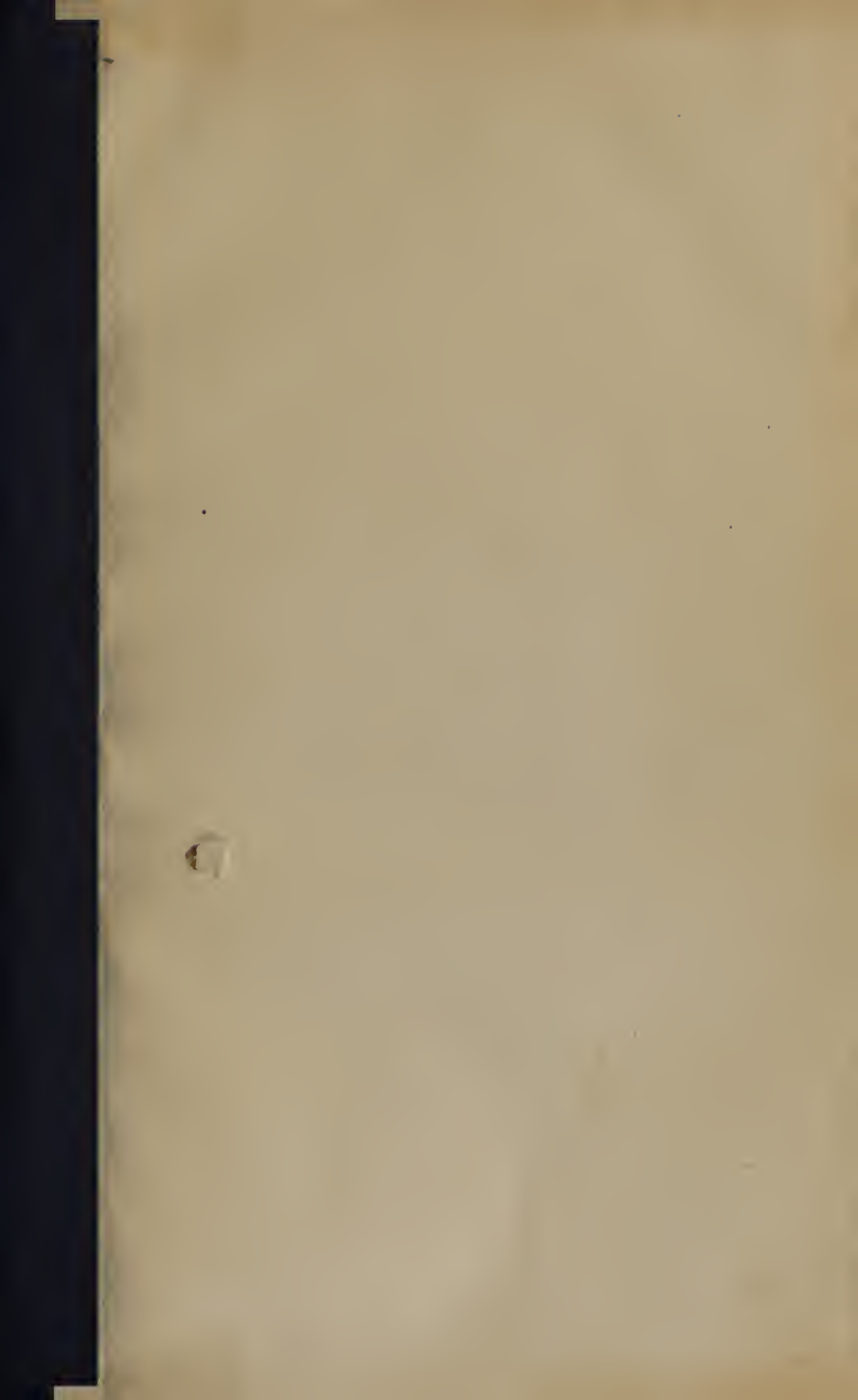
CORNELL. PRACTICAL OBSERVATIONS...
IN DISEASES OF THE AIR TUBES AND LUNGS.

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PRACTICAL OBSERVATION

ON THE

INHALATION OF VARIOUS VAPORS AND POWDERS

IN DISEASES

OF THE

AIR TUBES AND LUNGS.

✓
BY WM. M. CORNELL, M.D.

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ANNEX
Inhalation

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INHALATION OF VAPORS AND POWDERS.

I HAVE for some time contemplated writing a somewhat extended article on this subject, believing, as I do, that more benefit may be derived from inhalation, than has yet been experienced. Inhalation of vapors and gases, through the air tubes, to the pulmonary mucous tissue, has been more or less practised from the early ages; but several reasons may be assigned why it has not been attended with more favorable results, though, as will appear in the sequel, benefit has followed its adoption. In some cases, the articles inhaled, or breathed, have not been of a character to *be* beneficial; in others, the instruments for inhaling, or breathing the substances or vapors, have been of so clumsy a kind, that the thing could not be properly done; and lastly, it has, generally, not *been done at all*, till the diseases had assumed so grave a character that no human means could arrest them. These are good reasons for the results not having usually proved favorable.

I shall refer to several methods of breathing various atmospheres, gases, powders, &c., in consumption, catarrh, croup, asthma, and other diseases of the air-passages. It is well known that Dr. Beddoes recommended breathing an atmosphere of *factitious airs*, and Sir Humphrey Davy seems to have concurred in the same opinion. The former, also, advised patients threatened with, or laboring under, phthisis, to have a communication made from their rooms, to "cow-houses and stables," for the purpose of breathing the warm air of such places; and, when threatened with this disease myself, twenty-five years since, a physician of no small celebrity advised me "to keep about cows, oxen and horses, as much as possible." Nor do I even now imagine this advice was given without some reason for it, as there is undoubtedly a mildness and warmth of atmosphere about such places, very grateful and healthful to the shivering, hectic invalid. But I believe it would be much better to breathe such an atmosphere by going into it, than to admit a current of air from these places into a tight room or bed-chamber.

The vapor of *tar* was once highly recommended, as being very beneficial in phthisis. Its balsamic powers were said even to heal ulcers in the lungs. Drs. Mudge, Crichton, Paris, and others, all advocated its use. But still, it has ceased to be used. It is, however, quite proba-

ble, that there are stages in phthisis, in which its inhalation would be serviceable, though when ulcers had formed, it would not heal them ; and though I would not claim for it anything like what some of the celebrated gentlemen just named did, yet I think I have seen benefit derived from its use in *threatened* phthisis. It should be further tried, *watching carefully the period of the disease* (if there be any) when it is useful. It might be done in every public hospital, by having a room specially devoted to the purpose. The temperature of the air, and its proper medication, could, under hospital regulations, be critically adjusted, while in private practice it would be attended with much inconvenience. The tar employed should be such as is used for manufacturing ship cordage ; and it has been recommended to add half an ounce of the sub-carbonate of potass to every pound of the tar, to neutralize the pyroligneous acid generally found mixed with it. This acid would be likely to produce coughing. When thus prepared, the tar should be placed in a proper vessel over a lamp, and be kept *slowly* boiling in the chamber, both night and day, care being taken that the vessel should be cleaned and replenished every twenty-four hours.

The vapor of *iodine* has also been used in diseases of the air-passages and lungs. Drs. Murray, Scudamore, Corrigan and Barton, all wrote in favor of it. Iodine sublimes, in a moist atmosphere, at a temperature below that of boiling water, and also in a moist atmosphere remains diffused, at its common temperature, in the warm season. Iodine derives its name from the beautiful violet color in which it sublimes, when a vial containing it is placed in a stream of vapor ; so that a person need not fear, as Dr. Murray says a young lady, a patient of his, did, "when she saw the vapor approaching her breath, purpled almost like the ominous color of blood." Sir Charles Scudamore, in his "cases illustrative of various medicines administered by inhalation in pulmonary consumption," used the compound solution of iodine with alcohol for procuring the vapor to be inhaled, varying the proportion of the ingredients as the circumstances of the case required.

The directions given by Sir Charles are as follows. The recipe of inhalation is composed of:—R. Iod., potassæ iod., āā grs. vj. ; aquæ dist., ℥ v. ℥ iv. ; alcohol, ℥ ij. M. Fiat solutio, in inhalationem ad adhibenda. For each inhalation, he used from ℥ j. to ℥ vj. of this solution ; and from m.xx. to xxv. of a saturated tincture of conium—the *time* of inhaling being from thirty to forty minutes. The conium should be added to the *iodine solution just before* inhaling.

Sir Charles gives the following directions for inhaling these remedies. "At the temperature of 90° the volatile properties of iodine are given off very sensibly ; but the conium requires more heat, and that of 120° is not too much for the iodine. This degree, therefore, I most recommend ; or, if the patient have not a thermometer, let the instruction be, to put the water into the inhaler (first warming it a little to prepare it) quite as hot as the finger can bear without pain. The inhaler should be kept immersed in rather hotter water during the process. A good glass inhaler, also, is a material consideration. If it be small, and the tubes too contracted in the bore, the difficulty of inhaling would be great to

the invalid, whose respiration is easily embarrassed ; whereas, with a fit apparatus, the process is perfectly easy and not fatiguing. The temperature of the water with which the preparation is to be mixed should be from 115° to 120° Fah., and, when the proportion of iodine is increased to a full measure for each inhalation, I direct that the quantity be divided into two equal portions, the one to be used for the first ten minutes, and the other for the same space of time in continuation ; and, at the average frequency, three times a-day. But sometimes it may be expedient to use it for ten or fifteen minutes only at a time, and three or four times a-day. The inspiration should be as strong as can be conveniently made, in order that the vapor may freely enter into the lungs : but the patient should inhale in a manner not to fatigue the chest ; and this evil will be avoided if he allow himself sufficient interval, between the periods of inhaling, to recover power. I lay it down as a principle that inhalation should always be so conducted as not to produce distress to the patient in any way, either as regards the composition of the mixture, its strength, or the period of carrying on the process.

“ In first entering on the treatment of inhaling, the irritation of coughing is usually produced, and in some cases this happens on every subsequent occasion ; but unless this prove excessive, or permanent, it does not form an objection to the treatment, for the power of expectorating is remarkably facilitated, and, the bronchial tubes being cleared, a material subsequent relief to the cough is afforded. But a curative and not mere palliative effect is the object to be held in view. The proportion of alcohol contained in the different materials is too small to produce any inconvenient stimulation ; it is necessary as the menstruum, and it is useful, as causing the volatile parts of the medicine to rise more freely with the watery vapor.

“ In the commencement of the treatment, I advise very small proportions of the iodine mixture ; for example, only from half a drachm to a drachm, for an inhaling of eight or ten minutes, to be repeated two or three times a-day. Of the soothing tincture, I direct half a drachm, which I usually find sufficient ; but it may be increased if the cough be very troublesome. I soon augment the quantity of the iodine, and, progressively, from $\mathfrak{z}\text{ j.}$ to $\mathfrak{z}\text{ iv.}$; but, also, then prolonging the time of inhaling. I divide the iodine dose, putting two thirds at first, and the rest after the expiration of seven or eight minutes. It is of the utmost importance that the strength of the inhaling mixture should be considered in relation to the particular case ; the feelings of the patient will be a great guidance. In acute phthisis, the inhaling doses should be very weak. No remedy with which I am acquainted exerts so much influence over the hectic fever, used in the intervals, as the inhalation in question. The patient should have the sense of relief, and not of inconvenient irritation, produced. The cough, arising, occasionally, during the process, is not an objection ; but if it be more irritable afterwards, it shows that it has been used too strong. There is a certain stage of the tubercular disease, when over-excitement, from employing the iodine in too strong quantity, might hurry on the softening pro-

cess too quickly. It is here that the treatment demands the greatest judgment.

“In the employment of inhalation, perseverance is necessary, and in some instances, for many months. The object sought to be obtained is not merely palliative benefit—not merely a temporary impression on the morbid function—but the superseding of the diseased action by a healthy one, and the effecting some organic change.”

Sir Charles gives a description of his *inhaling apparatus*. He recommends a double-necked glass bottle; or a common wide-mouthed bottle may be used, the cork having two perforations through which the glass tubes are to be passed. About an inch of water should be placed in the bottom of the bottle, and to this, the inhaling mixture must be added. Through one of the necks of the bottle, or through one of the perforations in the cork (if a wide-mouthed bottle be used), a straight glass tube should be passed, so as to dip under the water. The other neck or opening should have a curved glass tube passing through it, through which the patient should inhale.

Dr. S. says, “The bottle should be large and the tubes capacious. The one issuing from the bottle should be upright, passing off in a gradual slight curve, so that the vapor shall not be much cooled in the course of its progress. The ingress tube should dip very near to the bottom of the bottle, that all the air so introduced may receive impregnation. The patient must be desired to inhale, by using, at the same time, suction and a pretty full inspiration, then to drop the under lip from the mouth-piece, and make a free expiration; so conducting the process by pausing, and, if he like, little suspensions, in order that he may not experience any fatigue, which would certainly happen by breathing quickly, or using an inhaler with small tubes, or with too much water in the bottle.”

I have thus given the process of inhalation by Sir Charles, because I consider the *subject* of great importance, and fully believe that much good may yet be reaped from it.

The *results* of Dr. S.’s experiments were much in favor of the practice. He says, he “could relate the cases of a gentleman, aged 54; of a lady, aged 20; and of a medical practitioner, aged 30, in whom the most unequivocal symptoms of tubercular disease were strongly developed, in whom there was every threatening of danger; and in all of whom, I was happily quite successful.”

In 1840, Dr. S. added to his former results, notices of other cases, in which cures had been effected, or, at least, great alleviations.

Five years after the description of these cases, and several others, in the *Medical Gazette*, he says, “The patients whose symptoms of tubercular phthisis, with the treatment, were fully described in this *Gazette*, have not had any relapse, and are now enjoying excellent health; a period of rather more than five years having elapsed.”

Other cases, equally satisfactory, are related, where there was every evidence, both from auscultation and other signs, of tubercular disease of the lungs, and sometimes it had advanced to the second stage.

“In every case one of the following events may be expected to hap-

pen: either that the tubercular irritation will be arrested and gradually removed, be arrested and suspended, but not cured; or pass on to the softening process, which terminates in the production of an excavation. In all these different states of the disease, I advise the inhaling treatment to be employed."

Of all the various agents which Dr. S. used for inhalation (and they were many), among which were the tincture of opium, tincture of digitalis, tincture of stramonium, of ipecacuanha, hydrocyanic acid and ether, he considered the tincture of iodine, or that and conium, the most efficient. He considers the iodine to be the only agent which exerts any influence in the cure of *phthisis*. But the iodine inhalation must not be employed when any inflammatory action exists. Its effects might be very injurious, and it should always be a fundamental principle of all medical treatment, that *no injury should be done*.

Dr. Berton, as quoted by Dr. Bell, says "In a flask with two tubular openings, I put diluted sulphuric acid, and on this a quarter or half a grain a day of the hydriodate of potassa; the iodine is promptly disengaged in the form of vapor, and this is inhaled by the patient through one of the tubes of the flask. The process is repeated from four to ten times a-day; the duration of each being from four to five minutes." This is the most easy and simple form of inhaling iodine, and it seems as though all its good effects can be secured by such an inhalation. I have tried it in this form with some success.

There can be no doubt but that the introduction of iodine into the system in the manner of inhaling, must have a salutary effect upon the disease. Why not as much so as the *dermatic* process of introducing medicines into the system? We know this is often a successful method, when the medicine can be introduced in no other way. Dr. Corrigan, who was an advocate for the inhalation of iodine in *phthisis*, says, "If we suppose the patient to inhale only one twentieth of the iodine evaporated, he will inhale in each hour, and apply to the diseased surfaces, one grain and a half of iodine in a state of the most minute division or solution. This quantity, we know, is quite sufficient to exert a decided action upon scrofulous ulceration; for we find, on reference to Lugol's valuable work on the employment of iodine in scrofula, that in external scrofulous ulceration, the preparation of iodine, which is found beneficial, is a solution which contains only about three grains of iodine in each pint of fluid." The beneficial effects of iodine thus inhaled in bronchitis, and other diseases of the air-passages, cannot be doubted, and a further trial of it should be made, not only in these diseases, which often hasten the development of consumption, but also in consumption itself, if it be evident that there is no active inflammation, and the apparatus for inhaling is such that the patient can perform the operation rather with pleasure than fatigue. These are items not to be forgotten nor disregarded. The more simple the apparatus, the better it will be. It should be so constructed as to keep up a supply of vapor for any length of time, and its evolution should be steady and regular, both in quantity and quality.

Chlorine also has been inhaled in *phthisis*. In favor of inhaling an

atmosphere of chlorine gas, it has been said that paper-makers, who are apparently more exposed to consumption than almost any class of persons, being constantly enveloped in clouds of dust in the rag rooms of paper-mills, never have this disease. The argument is this—"if chlorine and steam spread through the works can prevent phthisis, is it not reasonable to suppose similar means might contribute to the cure of persons who had contracted the complaint? Would not, therefore, the junction of chlorine gas and that of iodine be a rational proposal, regulated, of course, according to the different degrees of the disease?"

Dr. John Bell remarks of the above, "By similar arguments we might be persuaded that the vapor from oak-bark decoction is useful in phthisis, since it is stated in some quarters that tanners were not observed to be liable to this disease." Now, though I have ever been an admirer of Dr. B.'s writings, and wondered, a thousand times, how he could say *so much* (and that all good) in *so small* a space as he does, yet I cannot fully agree with him in this remark. In the first place, the parallel does not seem to be a good and perfect one; for the atmosphere of *chlorine*, all, it seems to me, would judge to be more efficient than one of *oak bark*; and then, again, it is, if I understand the process of tanning in this country, much more common to use *hemlock* bark than oak, and though the oak bark might be *good*, yet the hemlock might be *better*, as it contains more of a balsamic oil.

No doubt the inhalation of so powerful an agent as chlorine, requires to be administered with great care. If the solution to be inhaled is too strong, its tendency is to constrict the air tubes, occasion irritation of the bronchia, and provoke distressing cough. A person, however, may become so familiar with this gas, that he can endure much more of it than when he first commences its use.

Several French writers have spoken in high commendation of the inhalation of chlorine; and, though some of them published most flattering results, yet M. Louis says he has "studied the action of chlorine in upwards of fifty phthisical patients, at the Hospital of La Pitié, the Hotel Dieu, and the Hospital Beaujon. The chlorine (prepared at the Central Laboratory of the Paris hospitals) was inhaled with a vessel provided with two tubes. In no instance did I obtain any successful result from its employment." This statement, by so able a practitioner as M. Louis, has weighed heavily against the use of chlorine gas, and there can be no doubt that all the good effects of it may be secured by boiling chloride of lime or soda, by heating it in a large dish, by sprinkling it with muriatic acid, or by pouring sulphuric acid upon common salt.

I might describe various kinds of apparatus for inhaling chlorine gas, which have formerly been employed; but as I prefer the gradual evolution of the gas from a chloride, as that of lime, so as to impregnate all the air of the room with it, I forbear to name them. If we wish the vapor to be thrown off more rapidly, it may be accomplished by adding a small quantity of sulphuric acid to the chloride.

Dr. Albers states the following results from inhaling chlorine gas. "In tubercles of the lungs, in chronic catarrh, in chronic inflammation and ulceration of the bronchial mucous membrane, and in dilatation

of the bronchi, chlorine vapor is of no service, and in most cases will not be borne, in consequence of the irritation it produces. On the other hand, it has a very salutary operation in pure ulceration of the lungs or vomica. This state, however, is not to be confounded with suppurating pneumonia, to which the use of chlorine vapor is not so applicable. How far patients laboring under disease of the lungs may be adapted for using this remedy, cannot be determined; much will depend on general irritability and individual disposition, and the chlorine vapor should always be tried experimentally at first. From the foregoing observations, it appears that chlorine vapor produces salutary effects in chronic ulcers of the lungs."

M. Toulmanche says, "The greater number of the experiments, the inferences from which are here related, were made under a period of four years and a half in a 'maison de detention,' where pulmonary catarrhs are very common. The majority of the patients have borne very well the first impression of the chlorine, and all have become capable of employing it by gradually accustoming themselves to it. With the fewest exceptions, such as where great irritability and oppression existed, the chlorine was employed in every case which bore the name of pulmonary catarrh, acute or chronic, inflammatory or pituitous. Its sensible effect is to change the quality of the bronchial secretion, to diminish its quantity, and finally to put a stop to it." The result of the use of chlorine, in 223 females, is recorded as follows:—"Of these 223, 144 were affected with acute, and 65 with chronic bronchitis; 17 of which latter were double, 4 complicated with pulmonary emphysema, and 22 with phthisis. Of the 144 acute cases, 51 were cured in from five to six days; 33 in from seven to ten; 29 in two or three days, and 21 in from eleven to fifteen. The greater number were thus cured in from five to eight days; the smaller in from eleven to fifteen—a result much superior to that which is obtained by the ordinary means. Of the 65 cases of chronic bronchitis, 16 were cured in from ten to twenty-one days; 15 in from ten to eleven; 13 in from two to ten; and 1 only in eighty-eight days. The average of cures requires, therefore, from sixteen to thirty days, and two thirds of the patients recovered in from five to twenty or twenty-five days. This is regarded as a treatment two or three times shorter than that which is commonly employed."

This, certainly, is a great improvement upon the ordinary treatment, and deserves a further trial. If, by so simple a means as this inhalation, we can shorten the disease two thirds, we are inexcusable if we do not adopt it.

In a case of gangrene of the lung, I have found inhalation of the chloride of lime and the tincture of opium operate favorably, both in removing the offensive odor and in sustaining the strength of the patient.

The practice of inhaling ether and sal. nitre, and smoking stramonium, in asthma, is upon the same principle. These are all now well known to mitigate, and, generally, remove for the time, this distressing and very troublesome disease. Great caution, however, should be used in inhaling the smoke of stramonium, as too much of it may produce its deadly narcotic effects. The smoke of *sal. nit.*, in my opinion, is also capable of

poisoning the system. The following case came under my care some time since. An old gentleman, long subject to fits of asthma, had been advised by his physician to inhale the smoke of this article. He had done it for years, and with much relief to his asthma. But his daughter, who always administered it, was taken sick with a general debility. She lost her appetite, her feet and limbs generally were œdematous, and she seemed in a very critical state. It was my opinion, and hers also, that the smoke of the nitre was the cause. She has since avoided it, and with the use of tonics has recovered her former health.

In what I have now said on the inhalation of *vapors*, I have given the experience of others, and quoted much of their language, also, with some few of my own experiments. But in what follows, I shall give, not the treatment of others only, but also what has been my *own* experience. I have not attempted to be *original*, my principal design having been to call attention to a mode of treatment (yet in its infancy) which promises much in a class of diseases always distressing to the patient, and perplexing to the medical attendant, and often leading to a fatal result irrespective of the anxiety and efforts of both.

The vapor bath, when either the *moist* or *dry* vapor is inhaled, comes in for a share of our attention, while speaking of the therapeutical effect of vapor upon the *air-passages* and *lungs*. It is not designed, at present, to eulogize this kind of bath, or to show its beneficial effects in certain cases and other diseases, only as these modify or are connected with that class of diseases now under consideration; and this, to no inconsiderable degree, it must be admitted, is always the case, as there is a very intimate relation between the lungs and skin. Some years since, in various diseases, I often had an opportunity of perceiving, by their effects upon that class of diseases of which I am now treating, how essentially the lungs were influenced by the cutaneous absorbents, and other organs of the skin. The vapor bath may be used, and it is sometimes advisable that it should be used, without its being inhaled into the lungs; but of its use in this form, however valuable it may be, in the treatment of some diseases, I am not now intending to speak.

The kind and form of the vapor bath and its administration, which I now refer to, are thus spoken of by Dr. Erasmus Wilson in his "Treatise on Healthy Skin." "The vapor bath offers some points of difference to the preceding [those where the exterior of the body only was vaporized] in the circumstance of extending its influence to the *interior* as well as the exterior of the body. The bather is seated upon a chair, in a position agreeable to himself, and the vapor is gradually turned on around him, until the requisite temperature (from 90° to 100°) is attained. The vapor is, consequently, *breathed*, and thus brought into contact with every part of the *interior* of the lungs. The vapor bath has undergone much improvement within the last few years, and its powers, as an agent for the cure of disease, have been increased by the discovery of various vegetable substances, whose volatile elements are susceptible of being diffused through the vapor, and thus introduced into the blood, are made to act upon the system." This *interior* use of the plain and medicated vapor is the one now before us. Nor is its

use, either by the vapor of simple water, or with medications, *new*, though it may be, and doubtless has been, much improved; for Boerhaave long since recommended to the medical profession, "the employment of the vapor of water, distilled over elder flowers, in pulmonary catarrh;" and still further back towards the commencement of old time, "Hippocrates recommended fumigation—sometimes simply watery vapor, sometimes the vapor of vinegar." and sometimes he caused the vapor of water to pass through some of the gum resins and emollient and quieting herbs." Thus did the father of medicine use both plain and medicated vapor baths; and thus, too, has *inhalation*, and the internal use of breathing vapor, or vapor baths, been *legitimate* agents of the profession as long as it has existed.

Celsus, who flourished in the reigns of both Augustus and Flavius Cæsar, employed "sulphur fumigation," and the old Romans had a very convenient way of inhaling, either hot dry air, or moist vapor—it was simply to heat the kettle with the *cover on*, sufficiently to render the air of the room *hot*, for a *dry* inhalation; and to *remove* the cover, for a *moist* one.

Dr. Combe speaks of the vapor bath, when the *vapor is inhaled*, as follows—"In chronic affections, not only of the skin itself, but of the internal organs with which the skin most closely sympathizes, the judicious application of the vapor bath is productive of great relief. Even in chronic pulmonary complaints, it is, according to the Continental physicians, not only safe, but very serviceable, particularly in those affections of the mucous membrane which resemble consumption in so many of their symptoms."

There is some care necessary in the administration of these baths. They should not be taken when the body is greatly fatigued, nor near the time of taking a meal. In administering them the feet should be kept warm, either by having a full share of the vapor in contact with them, or by immersing them in warm water. Unless this is attended to, flushing and headache, with dangerous congestion of the brain, may be induced in some patients. There are some curious *physiological* effects produced by being encompassed in hot air, or vapor, and inhaling it. Magendie, as related in the *Gazette Medicale de Paris*, for April 27, 1844, gives us the following experiments:—take a rabbit or dog (whose normal temperature is 102° F.), place it in air heated to the temperature of 212° F., and another in air at 140° ; the blood in the first will be heated quicker, and death will ensue sooner, than in the last, but the temperature of both, when first dead, will be 111° , an increase of 9° above the natural heat. The heat of animals, then, it would seem, cannot be increased above a certain temperature. It also appears that a bird (the natural temperature of which is 111°) dies when its temperature is raised to 120° ; showing the same increase of 9° . It is a question, as to *how* this increase of temperature is effected; whether through the medium of the skin, or of the lungs, or both. To solve this question, he placed the *head* of a rabbit in a stove, leaving the body out; in a given period the temperature of the rectum was slightly increased. He placed only the *body* of another in the stove; the temperature of

the rectum was much increased. He therefore concluded, that the heat entered the system rather through the medium of the skin, than that of the lungs.

In the *dry* air bath, the weight of the animal is decreased; but in the *moist* air bath, it is rather increased. Thus, a man in the hot air bath is lighter than when he entered it; in the hot moist vapor, heavier. The former is occasioned by the evaporation, the latter by the absorption of vapor both by the skin and lungs.

Another curious phenomenon, in connection with these vapors, is, we can endure a higher temperature of *dry* than of *moist* heat. It has been found that 230° F. can be endured by man in a dry air; when, in the vapor bath, he will be very uncomfortable at 130°. An animal will die in a lower temperature in a vapor than in an air bath. This is easily explained upon the principle of pulmonary *absorption* and cutaneous *evaporation*. But it is a fact worthy of being remembered in administering, for inhalation, these hot air and vapor baths. The *lungs* will bear a higher temperature than the *body*. Thus, if we plunge an animal's head only into a heated vapor, he will live longer than he will if we plunge only his body in the vapor. This, also, is worthy of being remembered, when we wish to administer moist vapor into the lungs only, or to the air-passages, as is often done in croup or stricture. Every practitioner knows that the administration of a stream of heated vapor from hot water, through the spout of a tea-pot, often affords relief in such cases, when apparently nothing else will do it. Now, when we wish to do this, it is well to remember that, while the vapor poured upon the body at 122° or 125° is uncomfortable, we can pour a vapor of the temperature of 140° or 145° into the lungs without unpleasantness or injury. The lungs have but little influence in heating the body in the vapor bath. Magendie showed this in the following way: he kept a rabbit twenty minutes in water at 50°, its temperature then being 70; it was placed in a temperature of 194, and in fifteen minutes more it was taken out expiring; the temperature in the rectum being only 77, instead of 111, the heat being mostly taken up in evaporating the water from the hair of the rabbit, so that the system could be affected only through the medium of the lungs.

In following out the idea that we can endure a much greater temperature of dry heat than of moist, it may be added that Dr. James found himself nearly suffocated in Nero's vapor bath, at 122°, while he could endure quite comfortably the dry bath of Testaccio at 176. The moist vapor grows uncomfortable at 112°, and cannot be tolerated above the temperature of 125°; but we are told by Dr. Carpenter, in his "Principles of Physiology," that the workmen of the English sculptor Sir F. Chantrey, could enter a furnace in which his moulds were dried, when the floor was red-hot and the thermometer in the air stood at 350. Chabert, called the "Fire King," habitually entered an oven, when its temperature was from 400 to 600° F.

I wish to impress upon the profession the importance of the vapor of simple water in croup and kindred obstructions of the air-passages. As I have said of other modes and articles to be inhaled, so I say of

this, it is not *new*, but it is a good remedy, frequently affording relief to the distressed patient and agonized friends, when many other remedies have been tried in vain. It seems to me, I have seen life saved by this simple remedy. In *acute* inflammation of the throat and air-passages, I have found relief from the use of vapor at as low a temperature as 90°, and gradually increasing the temperature till it comes up to 125 or 130°. DR. BELL, speaking of the vapor bath, says, "If the head be exposed to the vapor, so that it is inhaled, the stimulating effects of the bath are increased, and the amount of the fluid absorbed very greatly augmented. The imbibition by the pulmonary veins is considerable, and so far serves to moderate the hurried respiration which the caloric of the vapor naturally tends to produce. When the dose of the caloric is not great, its stimulating action will be mitigated by the moisture, which may even predominate and give rise to soothing and sedative effects." The elastic power of vapor is a so much less conductor of heat than water, that a moist vapor bath at 100° F. only equals, in its stimulating effects, a water bath at 90°.

When there is any disease of the internal mucous membrane, as in bronchitis, or any of the air tubes, it is always preferable to *inhale* the vapor of the bath, whether it be simply that of water, or impregnated with various aromatic herbs or gums; though such is the relation of the skin to the lungs, that much relief might be found to such diseases, even when the vapor is brought in contact with the skin: for, what the skin does not do, the lungs must, and *vice versa*, or the patient must sink.

"*Dicam pauca me*," as Cicero often said. I cannot well forbear doing this, in this connection, however much it may savor of egotism. For several years, I was subject to turns of *hoarseness* upon taking the slightest cold; indeed, there was such a chronic weakness of the laryngeal and bronchial tubes, that the simple effort of speaking for a few minutes produced it, even when no cold was induced; and when any was contracted, the difficulty of speaking was greatly augmented. A feeling, as though something were lodged in the larynx, and a constant disposition or effort to *swallow* it, was ever present. When otherwise in tolerable health, the voice was hoarse or grum, like the low bass of a viol, or the croaking of a frog, such was the relaxation of the vocal cords and their adjacent tubes. The difficulty was so serious, and continued so long, that I was compelled to desist from speaking in public. After consulting many physicians and experimenting with many remedies—after having the *uvula* truncated, which was done by Dr. Lane, senior, of this city—and the application of solutions of the nitrate of silver, and Lugol's solution of iodine, all of which afforded some relief, I derived the most permanent benefit from the use of the vapor bath, applied to the skin and *interior* organs of the throat and lungs, in the manner above-named by Mr. Wilson. Generally, nothing but the vapor of simple water was employed, though sometimes it has been medicated with elder flowers, bone-set, and other aromatic herbs, and a few times, with some of the resinous substances. Though I have been much more free from this difficulty for several years, than formerly, yet there is still a tendency to bronchial and laryngeal disturbance; and whenever this is the case,

whether immediately induced by over-action in speaking, or by sudden changes in the weather, I have resorted to the vapor bath. This has had the desired effect. Its influence, generally, upon the skin is to make one feel as though he were newly "swept and garnished," or as the Syrian General did when he "had dipped himself seven times in Jordan;" and inhaling the vapor at the same time has soothed the irritated membranes, freed them of mucus, and thus restored them to their proper state. Instead of taking medicine, or applying astringents or caustics, this has been my talisman in every such emergency; and, having found it thus beneficial, it is not surprising that I should be partial to its use, in accordance with the old adage, "We should speak well of a bridge which carries us well over." I never take the bath without inhaling the vapor. In any case, unless where there is a strong determination of blood to the head (and even this may generally be obviated by applying to the cranium a towel wet with cold water), this would be to deprive the bath of half its beneficial effects. There is no danger of taking cold, provided the bath be raised to a temperature sufficiently high to cause some excitement upon the skin and some acceleration of the pulse, and the ordinary precaution be taken of not getting chilled after leaving it.

The bath, thus administered, is an excellent substitute for the whole catalogue of diaphoretics and counter-irritants. It procures free perspiration from the cutaneous vessels and expectoration from the air tubes, which, if we attempt to accomplish by drugs, we are always in danger of irritating the stomach and bowels and augmenting the functional derangement of all the visceral organs. It is no new thing to cure a cold, or chronic catarrh, by the use of the vapor bath, applied both to the skin and air passages, as is illustrated by the account of Dr. Kentish, quoted in a note by Dr. Bell, which also shows that there is but little danger of taking cold after its use. The case referred to is but another illustration of the intimate relation and sympathy between the skin and the lungs, and shows that though, by inhaling the vapor, we may accomplish much, yet, often, in order to effect a cure, we must apply the vapor also to the skin; and though it is not designed, at present, to speak of the usual advantages of the vapor bath in the treatment of chronic diseases generally, yet this subject may well form the basis of another paper, at some future time.

Dr. Bell, after enumerating the various diseases in which the vapor bath was highly beneficial, when administered without inhaling the vapor, adds, "Immersion in the vapor bath is, however, sometimes complete, so that it is inhaled into the lungs, and thus applied to their mucous surfaces in a long list of diseases. This mode of administration would even have marked advantages" (and this is all the mode of which the writer of this article designs to speak, or which is applicable to the class of diseases now under consideration), "when the pulmonary mucous lining is in a state of irritation, and the skin at the same time dry, and the perspiration deficient, as we find in catarrh, bronchitis, croup, asthma, and a certain stage of measles and smallpox. When, likewise, the lungs are perfectly sound and clear of irritation, while there is febrile disturbance of the system, with small or active hard pulse, there would be great advantage in

introducing moisture freely into the pulmonary cavities, as it would be rapidly and greedily absorbed and carried into the circulation, and act as an effectual diluent. The main point on all these occasions, from which our attention is never to be diverted, is, that the degree of heat of the vapor shall bear a due proportion to the heat and febrile excitement of the system, so that there shall be an inverse ratio between the two: the greater the excitement, the lower the temperature of the vapor bath, and the reverse."

M. Rapou gives examples of the entire relief afforded in cases apparently of incipient phthisis, by the use of the vapor bath, *when the vapor is inhaled*, or in his Oriental bath, which was, by inhaling it.

The inhalation of vapor, or the vapor bath of which I have thus spoken, has no resemblance to the "steam bath" of modern times; nor is it new. It has been employed and recommended by many eminent members of the medical profession, for many years past; and in calling attention to its use, I have only imitated many who have gone before me. I am confident more of these baths, and less drugs, would be an improvement in general practice. Nor, by this remark, do I mean to censure the present routine of medical practitioners, as it is believed, there has been an improvement in the use of drugs within the last twenty years, both creditable to the profession and beneficial to patients. The physician who prescribes a proper course of living, in all its minutiae, for his patient, does more for the benefit of his employer, than he who simply prescribes a cathartic or emetic, or a tonic course of quinine and iron. As a general remark, it will be found true, that inflammation and irritation of the air passages will be greatly soothed and relieved by moist vapor, especially when it is made to convey the anodyne, narcotic and expectorant properties of certain medicines; and, that a relaxed state of the mucous membrane of all these passages, with much secretion, will be greatly benefited by dry air, heated by flues passing through the apartment of the patient (or in some other manner); and this good effect will frequently be augmented if the properties of various aromatics and resinous substances are held in suspension by such a rarefied atmosphere.

In consumption and diseases of the air-passages, in addition to the articles already named, which were used in the form of *vapor* or *factitious atmosphere*, may be named, various *salts*, and other substances, combined with some light, innocuous menstruum, used simply as the vehicle of the medicine. Cinchona, sulphate of iron, myrrh, sub-nitrate of bismuth, sulphate of zinc, sulphate of copper, alum, acetate of lead and nitrate of silver, have all been used by inhalation. The method in which they were formerly employed, was by being mixed with sugar. Thus, the zinc might be gr. j. to sugar grs. xxx.; sulphate of copper, gr. j. to xxv. grs. of sugar; alum, grs. v. to grs. x. of sugar; acetate of plumbi, grs. ij. to grs. xiv. of sugar; nitrate of silver, gr. j. to grs. lxxij. of sugar. The sub-nitrate of bismuth might be used alone or combined with sugar.

These powders were all made of the *substances* of the medicines, and thus the substances must be inhaled. It was not so easy to do this, and the sugar was quite too heavy for a vehicle. Still, no doubt, they

were useful in laryngitis, bronchitis, and other affections of the air-passages ; but it is doubtful, whether the medicines actually reached the air-cells of the lungs, as, when compounded with so heavy a vehicle, they would be likely to stop in the pharynx and the larynx, especially as they were directed to be inhaled with a simple tube or quill, one end of which was dipped into the powder and the other put into the mouth.

Since the noticeable appearance of the *pharyngo-laryngeal* disease of the mucous membrane of the throat, or clergyman's sore throat, as it has been called, the nitrate of silver, and other kindred salts, have been employed with great success, in almost all inflammatory diseases of the throat, or air-passages. The introduction of *solutions* of these articles, of various strength, from ten grains up to eighty or ninety, with the *probang*, camel's hair pencil, or syringe, has been very common treatment ; and, often, though not always, it has been followed by recovery.

Having previously given some attention to this class of diseases, soon after Dr. Green, of New York, commenced his practice of introducing this remedy into the larynx, and published his book on the pathology and treatment of "The Diseases of the Air-passages," I began to treat them after his manner, using various other salts besides the *nitrate*.

I think it was in March, 1848, that Dr. T. K. Chambers, of London, published in the London Lancet, and also, in the Medical Gazette, an account of his use of an *inhaling powder* ; and giving its *composition*, I immediately had some of it prepared according to his formula, which is as follows :—

"The plan is, the inhalation of a light innocuous powder, which may carry with it the required substance, either diffused in the air or absorbed in its pores. That which I have found well suited to the purpose is the pollen of the lycopodium, or club-moss, which has been made to imbibe as much as it would take up of a saturated solution of nitrate of silver, or of sulphate of copper, or of the two combined, and then carefully dried, and reduced again to an impalpable powder. Mr. Squire has made me some, which, in two grains and a half, contains one grain of nitrate of silver, and another, which in five grains contains one of nitrate of silver and two of sulphate of copper. The patient should introduce into his mouth, as far as he can without choking, a well-dried glass funnel, and draw in his breath strongly, whilst he himself, or a second party, dusts the powder in a dense cloud into the large end with a nursery puff-ball. If the dust be raised by an attendant, the patient can indicate the moment he inspires by raising his hand. To obviate the necessity for withdrawing the funnel during expiration, to prevent the dust being blown about the room, an apparatus may be used with a double valve and a closed powder-box, which allows the dust to pass inwards only ; but the employment of metal makes the machine less agreeable than the more awkward but cleaner-looking and less formidable glass."

I have found this powder serviceable in several cases of bronchitis, laryngitis, ulcerated sore throat, inflammation of the mucous follicles, and in incipient phthisis. It is much preferable, prepared as here directed, to that mixed with sugar, as the *real pulverized nitrate* was then used ; but, as here prepared, the *nitrate* is first *dissolved* in pure water, then

the "pollen of the moss" is dipped in a saturated solution (or that of any other strength desired), then dried, and *finely pulverized*. It can be made of any desirable strength, and should contain less of the *nitrate* than that made from a *saturated* solution, when employed with very irritable patients.

The caustic and astringent property of the nitrate is often useful in chronic catarrh, or in a recent cold, by combining a little of this powder with any kind of snuff, or snuffing the simple powder. It can also be conveniently applied to *indolent* ulcers, and answers every purpose of the stick of *lunar caustic*, or *solutions* of it. It is useful, also, in various cutaneous diseases, such as ringworm, nettle rash, &c. I had one case of *tetter*, which was cured by it, after resisting numerous other remedies. But I need not speak here of the power of this salt over this class of diseases, and have referred to it only to say, that used in *this form* it is quite as convenient as in any other, and as efficacious.

To return to inhalation—I have sometimes combined with the "nitrate," *instead* of the "pollen of the moss," or *with it*, the flowers of the *papaver somniferum*, but am not aware that it has afforded any more satisfactory results, than when made according to the formula given above. In fact, it does not form so light a vehicle, and it is doubtful whether there is any of the narcotic property of the poppy in the leaves or flowers.

For inhaling this powder I used various kinds of instruments; at first such an one as Dr. Chambers has above recommended. Then various others were tried, all calculated to make a dust of the powder, and thus prepare it to be drawn into the lungs with the air. A small quantity, say three or four grains, of the powder, is put into the receiver of the inhaler, the inhaler is then placed in the mouth of the patient, as far back upon the tongue as can be conveniently borne; then held by the lips, or left hand of the patient, while with the right hand the receiver is twirled round to scatter the powder, and, by a full inspiration at the same time, it is conveyed into the throat. This process may be repeated once a day, or more frequently, if desirable. If the *solution* is used, the shower syringe is altogether more convenient and easy of application, and agreeable both to practitioner and patient, and does the work much more thoroughly, than the probang.

If the mucous membrane of the pharynx or larynx is inflamed, or very tender, and the powder contains the full strength of a saturated solution of the nitrate, it will produce slight snarting or tingling in these parts. I have used it in *canker* in the throat, in what has been called clergyman's sore throat, and in chronic mucous inflammation of any portion of the air-tubes, with much satisfaction—its specific effects being soon perceived. In *ulcerated sore throat*, I think it the best remedy that can be used. In *bronchitis*, it does what, I think, no other remedy will do so well, causing a speedy clearing of the tubes, and disposing them to take on a healing action. In *phthisis*, I cannot speak so confidently of its success, though, in its first stage, I have often, and once or twice in the second stage, seen it prove very serviceable. I have sent it, with an inhaler, to more than thirty physicians in the country, from

many of whom favorable accounts have been returned. Some have found it so successful that they have sent, at many different times, for more of it. Some have said that they have raised patients with it whom they felt confident could not have been raised by former modes of treatment.

As I claim no *originality*, as to the invention of the powder, so I have had no *secrecy* as to its use, having given the *recipe* as I found it, and my manner of employing it, to the public, in the Boston Medical and Surgical Journal, as soon as I had fully tested it.

I have also made trial of the zinc, copper, alum, and some other astringents, prepared in the same way, but I think the nitrate, for general use, is preferable to any other. The sulphate of copper, in some cases, has been as serviceable, and I have thought, even more so, in *syphilitic* sore throat.

It yet remains to be seen what will be the full and final result of this remedy, as applied in the manner here spoken of, in diseases of the air-passages and lungs. In a class of diseases which have so very generally resulted in death, it seems to claim the *attention* of medical men, and to deserve a fair and thorough trial.

There is one other way in which I have recently employed the *nit. argent.* in this class of diseases, and which, so far as I know, has been original with me—at least, I have never seen any account of its being so used—and that is, *inhaling the vapor of water impregnated with the salt*. This I have done very recently, in a few cases, and with apparently good effects; though sufficient time has not yet elapsed, since I commenced this mode of using the *nitrate*, to speak very confidently about its success. I have, as yet, used it mostly in those cases in which inhaling the *powder* produced severe coughing, or so disturbed the patient, at the time of using it, that it seemed advisable to discontinue its use in that form. The following has been the proportion of the *nit. argent.* to the quantity of the water employed:—R. Aqua fontis ferventis, Oss.; *nit. argent.*, grs. xlvijj. M. The vapor of this mixture has been imbibed from the spout of a tea-pot, like the vapor of simple water in cases of croup. The vessel which contains the vapor had better be made of glass. I have thought it advisable to add to the foregoing remarks the following *cases* which have come under my treatment.

CASE I.—A gentleman, aged 22, a bookseller, naturally of a good constitution, called on me for medical advice in October, 1848. He was laboring under a hard, severe cough, which had lasted several days. It commenced with coriza, sore throat, hoarseness; a feeling of chilliness, lassitude and weakness in the limbs, more or less febrile action, and, in short, all the ordinary symptoms of *acute* bronchitis. There were present, also, a sense of tightness or stricture, weight and soreness, in the chest. I prescribed the ordinary remedies used in acute bronchitis. The amendment was but little, during the first four days. At this period I directed him to inhale two or three grains of the powdered nitrate, compounded according to the above formula. There was a marked improvement within the first twenty-four hours, and in one week more, the patient was discharged, cured.

CASE II.—Nov., 1849, Mr. S., aged 35, called on me with all the ordinary symptoms of *chronic bronchitis*. There were cough, expectoration of a greenish, tenacious mucus, sometimes streaked with blood, with, occasionally, small, whitish, opaque solid particles mingled with the sputa; such as by some have been supposed to be tubercles, but which were really concrete, secretions of mucous follicles in the fauces. The pulse was somewhat more than ordinarily frequent, and there was present, every day, a slight febrile paroxysm. Indeed, he had all the symptoms of what was formerly called *catarrhal consumption*. While inhaling a small quantity of this powder, two or three times a-day for four weeks, he recovered his usual health, and has as yet (now more than a year) had no relapse. Other treatment was also employed, and so it was in all these cases, but this *powder* seemed the most efficient.

CASE III.—A lady, aged 35, had been afflicted for three months with the following symptoms:—hard cough, severe dyspnœa, copious expectoration of a ropy, glairy, transparent and frothy mucus. The expectoration was very profuse, often amounting to two or three pints in a day. *Auscultation* developed, at first, dry morbid sounds, then the mucous *rale*, showing that there was occasionally congestion and tumefaction of the bronchial mucous membrane. The physical signs clearly showed the existence of what was once called *humoral asthma*, and by Laennec *pituitous catarrh*. She began immediately to improve upon inhaling the powder; and though still subject to occasional attacks of irritation in the bronchia from sudden vicissitudes of the weather, has for a year and a half enjoyed tolerably comfortable health. She felt relieved within a week after commencing the inhalation.

CASE IV.—Mr. S., aged 20, a well-marked case of *phthisis*, with but slow development in the softening of the tubercles. Chronic inflammation of the pharynx and larynx—could not inhale the powder on account of the irritation. Applied solution of the strength of 40 grains to ℥j. water, with the syringe. Soreness of the pharynx and larynx relieved, but tuberculization continued to go on, and death followed.

CASE V.—Mr. D., a mechanic, aged 38, had been afflicted with acute bronchitis, but had recovered from the attack. Some months after, began to be hoarse; had irritation about the throat; made frequent efforts to *hawk up* something for relieving the larynx; had a sense of soreness in the laryngeal cavity. The fauces and laryngeal membrane were covered with granulations of various sizes, very much like the pustular inflammation of varioloid. The uvula was elongated, and the lower third of it covered with similar follicular papulæ. In fact, this was a marked case of Dr. Green's *follicular disease of the pharyngo-laryngeal membrane*. An alterative course of medicine was prescribed, and the powder of the nitras argenti inhaled. The diseased follicles very soon (where they were visible) put on a more healthy appearance, the general health improved, the hoarseness gradually disappeared, and in six weeks he was apparently free from disease.

CASE VI.—A sea captain, aged 48, had visited many portions of the globe, been a *free liver*, and not always *prudent*. The whole throat was much diseased, much atrophied and cavernous; the mucous follicles

were much enlarged, very vascular and tuberculous. The uvula was elongated, and the epiglottis œdematous. There were cough, expectoration of a semi-purulent mucus, and some dyspnoea. The *physical signs* indicated bronchial disease, with pectoriloquy. There were, also, present in the system, unmistakable symptoms of the disease in which all his troubles originated. He had had a solution of the *nitrate* applied to the pharynx in the form of a gargle, as he stated, and proved by the following *recipe* from an eminent physician. R. Arg. nitrat., ʒj. ; aqua rosæ, ʒv. M. He was directed to inhale the pulvis nit. argent. et licopod. bis diem ; and to go into the *vapor bath* three times a week. The following prescription was given :—R. Potassii iodid., ʒij. ; aqua dist., ʒv. Dose, a teaspoonful, ter diem. The fauces, pharynx, and, so far as could be seen, the larynx and the whole of the *throat*, had improved much in three weeks. At the expiration of this time, the following was substituted for the iodide :—R. Ol. jecoris aseli, ʒiv. ; sol. carb. potas., ʒss. ; syr. limo. cort. ʒij. ; aqua carui, ʒss. M. Dose, two table-spoonfuls, bis diem. The epiglottis was visible, erect and œdematous. There was pain in the larynx, and soreness over the thyroid cartilage. The voice was husky, at times quite hoarse, cough, emaciation ; in a word, all the symptoms of *constitutional syphilis*, with several of the rational signs of phthisis, were present. He had tried many remedies, had had a physician in every port, and exhibited a handful of recipes which he said he had “dearly paid for,” and tried the medicines. Still he “was no better, but rather worse.”

As he had taken the bichloride of mercury and iodide of potassium pretty freely, I directed him to take three of the following pills, three times a-day :—R. Extract conii, grs. xv. ; ext. podophylli, ʒij. M. Fiat masse, in pilulas no. 80. To use the vapor bath three times a week, and to inhale the pulv. nit. arg. ter diem every other day. I also applied the lunar caustic in stick form to all the diseased follicles that could be reached in the fauces and pharynx. Under this treatment, he began, very gradually, to improve, and at the end of three months was discharged cured.

CASE VII.—A gentleman from the country, aged 28. All the external appearances indicate phthisis : countenance pale, anxious, haggard and emaciated, night sweats, distressing cough, short breathing ; expectoration of mucus, mixed with pus ; voice husky, deglutition difficult, and breathing stertorous. Both tonsils are much enlarged and ulcerated ; uvula elongated, and nearly one half the length ulcerated ; pain in the larynx and soreness in the region over it. The physical signs manifested tubercles in process of softening. The prognosis was very *doubtful*. He was ordered tinct. sanguinaria, ʒj. gtt. 30 bis die. R. Morphia, grs. iij. ; tinct. actæ racemosa, ʒj. M. gtt. 25 ad noctem. Also a very weak solution of nit. arg., grs. iij., to ʒj. aqua distil., applied with a camel-hair pencil to the enlarged tonsils and elongated uvula. The strength of the sol. nit. arg. was increased on each application by grs. iij. to grs. lxxx. to ʒj. aqua. Twice the tonsils were touched with Lugol's iodine caustic, and twice the stick of lunar caustic was passed into, and around the surfaces of the hollows which did here, and usually do

exist, in indurated tonsils. The cauterization was employed once a week—the design being rather to *preserve*, than to destroy the tonsils. After thus applying the caustic for four weeks, the tonsils were so far reduced that I thought it expedient to commence inhaling the pulvis nit. arg., which would affect the tonsils, pharynx, larynx, bronchia and lungs. This was continued as often as every two days for six weeks longer, when the tonsils had come to their normal size, the inflammation about the air-passages had disappeared, and the patient was every way much improved. At the end of three months he was discharged, cured.

CASE VIII.—A child 5½ years old. Tonsils very much enlarged; considerable cough; stertorous breathing; apparently much bronchial dilatation; voice husky, sometimes quite hoarse. Some signs of tuberculization present. Evidently of a strumous habit. Parents say “she has always had a cough.” Face œdematous. Prescribed:—R. Potassii iodid., ʒ i.; aqua dist., ʒ v. S. A teaspoonful ter diem, in mucilage acacia, or sugar and water. And the following ointment applied externally, under the ears and chin, night and morning. R. Potassii iodid., ℥ iss.; adipis, ʒ i. M. The chronic amygdalitis was treated upon the plan already spoken of in these observations, viz. commencing with a very weak solution of the nitrate, two grains to the ounce of water, and gradually increasing until a saturated solution was employed. Thus, instead of aiming gradually to destroy the tonsils, their preservation rather was sought. The stick caustic was applied to the surfaces of the hollows in the tonsils. The tonsils in five weeks had lessened considerably, and the inhaling of the pulvis. nit. argent. was commenced. Under this treatment the child’s health continued to improve. The tonsils became of the normal size, and the cough and bronchial irritation disappeared. The local difficulty was very much removed by the pulvis. nit. arg. et licopod., while the disease seemed to be eradicated by the alterative medicine.

CASE IX.—A girl, aged 13. Enlarged indurated tonsils; cough, stertorous breathing when sleeping; general debility; bronchial irritation; hoarseness, sometimes entire loss of voice. Treatment commenced with inhaling the pulvis nit. argent. once a-day. Ordered a tablespoonful of the following alterative, morning and evening. R. Decoct. sarsaparilla, Oi.; iod. potassii, ʒ iii. M. In six weeks she was discharged from treatment, cured; but directed to take the medicine still longer.

The unguent. iod. pot. was applied externally as in the above case.

My design in this pamphlet has been to call the attention of both the medical profession and patients to a mode of treating a very distressing and often fatal class of diseases, which promises more for the restoration to health of this class of patients than any other that has come to my knowledge. The plan of treatment is simple, but, nevertheless, much is depending upon the powder for inhalation being well prepared and properly inhaled. It requires great care to make this powder in a proper manner, and the inhaler should be such as will easily convey it into the air tubes. I have inhalers at my office of various forms and construction, and varying in price from one to three dollars, which will be carefully put up, with two vials of the powder, containing two drachms each, a

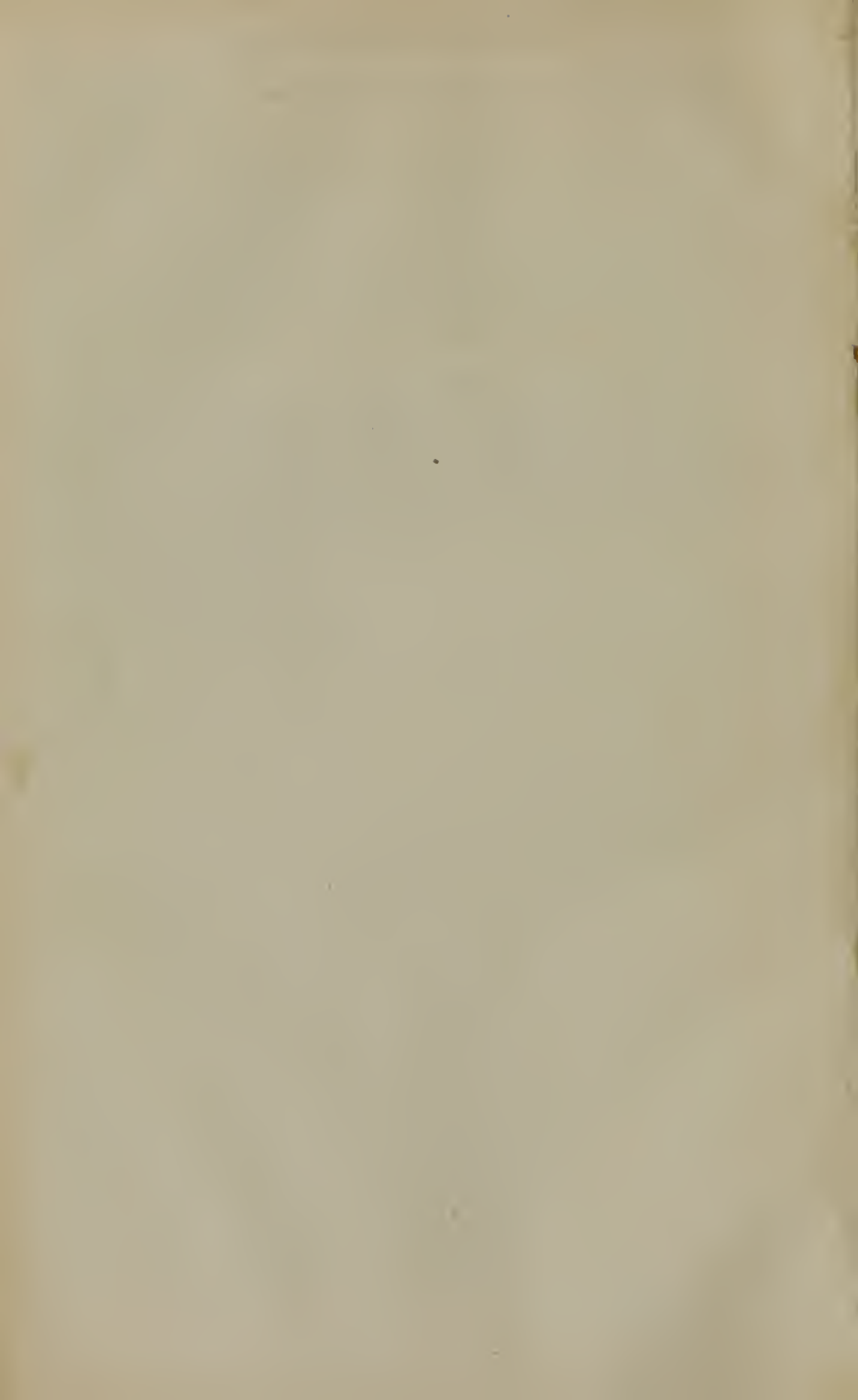
quantity sufficient to make a fair trial in any given case, and sent to any part of the country.

It should not, however, be used in all cases, indiscriminately, as by so using it, injury, instead of benefit, might sometimes be the result. It will be always the safer course for each patient to consult his physician before employing it, and always to use it under the watch and care of some one competent to decide upon its effects. In writing this pamphlet I have had no wish to take these cases out of the hands of their physicians, nor to induce patients to become their own medical advisers. I know from some experience, both personal and as a practitioner, that this class of diseases requires much study and practice to be successfully treated.

It should be further stated, that the *inhalation of the powder*, or any of the *vapors* named above, is not designed to interfere with any other medical treatment which any physician may choose to prescribe for his patient. These observations were intended, originally, as an Appendix to the book, or indeed to the two books which have been heretofore published, one on "Consumption Prevented," and the other on the "Curability and Treatment of Consumption." They form a part of the treatment of that disease.

Boston, Dec. 20, 1850.

No. 496 Washington Street.



PRACTICAL OBSERVATIONS
ON THE
INHALATION OF VARIOUS VAPORS AND POWDERS
IN DISEASES
OF THE
AIR TUBES AND LUNGS.

BY WM. M. CORNELL, M.D.

1851

BOSTON :
PUBLISHED BY CROSBY & NICHOLS, 111 WASHINGTON STREET.
1850.

Dose of the following Medicine

Alum from 10 to 20 grains. This has been used in Chronic Catarrhal affections of the Mucosa and cartilages and in great discharges from the bronchial tubes. It is also in use combined with Opium in all inflammatory diseases of the air passages. It is often recommended in larger doses say 30 grains to cause expectoration with diminution of the inflammation.

This very simple remedy of alum has not only cured Catarrh of the Larynx, but it has also cured Chronic & acute loss of the voice. Alum tannin sulphate of Zinc or sulphate of iron have all cured Chronic Catarrh.

The dose of tannin may be from 2 to 20 grains - and it may be used for all the purposes for which alum is used.

The following are the large numbers of
large numbers of the same kind
or some of them.

Some of the great numbers of the same kind
which have been found in the same place, and
and after a careful study of the whole
of the large numbers have been found
in the same place. Since the number of
the numbers of the same kind
has been found in the same place. Of course
the numbers must be applied while
there is power left to make.

The water from 2 to 4 teaspoons
is mixed with milk & given
in small quantities from the iron
secretions. It is some times
the same water and also in large
in the large.

The water may be given in small
in the large, and for all the purpose for
the water has been named.

